

LAADS DAAC Migrates to the Cloud: Lessons Learned from Communicating About Earth Science Data on the Cloud

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Level-1 and Atmosphere Archive & Distribution System Distributed Active Archive Center (LAADS DAAC)

What LAADS DAAC?

NASA's Level-1 and Atmosphere Archive and Distribution System Distributed Active Archive Center (LAADS DAAC) primarily archives and distributes data on clouds, water vapor, and aerosols in Earth's atmosphere as well as key instrument data for NASA, NOAA and European Space Administration missions. LAADS DAAC is one of twelve DAACs that are part of the NASA Earthdata group.

Background

As part of NASA's open-science policy and related goals, the LAADS DAAC is migrating its Level-1 and Atmosphere product collections to the Earthdata Cloud. All these data collections and services remain freely available to the global user community.

To keep data users informed on the progress of LAADS DAAC data migration to the Cloud and educated on how to access LAADS DAAC data, LAADS DAAC created a communications plan that incorporates lessons learned from other institutions, tutorial videos and a central resource with information about LAADS DAAC in the Cloud.



Methods

To prepare LAADS DAAC's transition to the Cloud, LAADS DAAC :

1. Researched how other DAACs communicated their transition to the Cloud.
2. Attended presentations regarding best practices in communicating Open Science.
3. Adapted education principles and best practices to educated users on how to access data in the Cloud.

References

Hunzinger, Alexis, *Early Lessons Learned from Supporting End-users' Transition to the Cloud*, LAADS DAAC User Working Group Meeting, November 16, 2022

Laws of UX (n.d.) *Jakob's Law*. Laws of UX. Retrieved December 2, 2022, from <https://lawsofux.com/jakobs-law/>

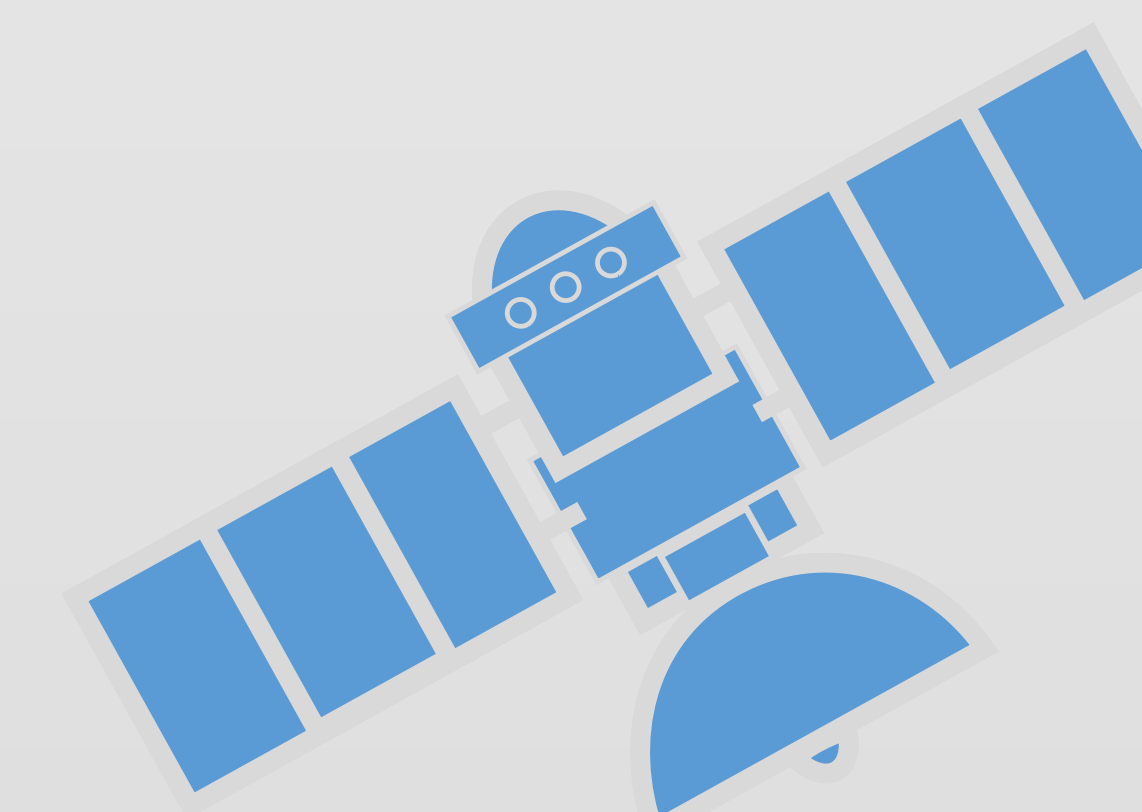
Brecht, H David, *Learning from Online Video Lectures*, Journal of Information Technology Education: Innovations in Practice, Volume 11, 2012.

Research

- NASA's Goddard Earth Science Data and Information Services Center (GES DISC) was formerly under the Global Change Data Center (GSDC) at NASA Goddard until 2022, when GSDC merged with the Terrestrial Information Services Laboratory (TISL). This merger presented the opportunity for LAADS DAAC to create methodology for presenting Cloud migration data in a similar manner to GES DISC. By keeping information consistent our data users find it easier to find information because they are already familiar with how the information is presented on a related site. This upholds Jakob's law of User Experiences (Laws of UX, n.d.).
- Additionally, information presented on early lessons learned from supporting end-users' transition to the Cloud (Hunzinger, 2022), developed with GES DISC's transition to the cloud, acknowledges that new skills are needed by the end-users and therefore, a robust education component must also be part of communications efforts.

Research

- Of the 12 DAACs under the Earthdata group, two have sections devoted to information about the cloud migration, GES DISC and PO.DAAC. ASF also has migrated, but they do not have information about the migration available on the website, presumably because the migration is complete.
- Both GES DISC and PO.DAAC have a top navigation menu item for cloud data.
- GES DISC implemented one page with tags to locations in the page with more information about different topics, including Introduction, Benefits, What's New, What to Expect, Migration Status, GAQ, How-To, Additional Resources, Questions? GES DISC How-To section has short visual guides on How To Obtain the S3 URL for a GES DISC Collection and How to Directly Access MERRA-2 Data from an S3 Bucket with Python from a Cloud Environment.
- PO.DAAC has a main landing page devoted to general information about cloud data.



Research

- Acknowledging end-users' need to learn how to access and use LAADS DAAC data implies that educational principles and best practices can also be applied to teaching data users to access data and conduct analysis in place.
- Feedback from an internal survey suggested that both written and video tutorials are recommended, reaching auditory, visual, and reading learners. Video tutorials along with written code examples and clear step by-step instructions can reach multiple learning modes, provide users with opportunities to replay or skip segments, adjust speed and topic selection to match their individual learning pace and interests and view videos where they study most effectively (Brecht, 2012).
- Early lessons learned by GES DISC (Hunzinger, 2022) also suggest that additional immersive workshops can benefit end-users' understanding and application of data.

Lesson #1 Learn.

Learn from Others.
Don't reinvent the wheel. Other institutions have been moving data to the Cloud for a long time and they have a wealth of knowledge to share.

Lesson #2 Educate.

Tutorials make learning easier. Showing people examples of how to access data in the Cloud, makes it easier to understand how to work with their own data in the cloud.

Lesson #3 Adapt.

Data users will need to acquire new skills and identify opportunities to collaborate. Be open to a changing landscape of knowledge acquisition and collaboration as access to open science in the cloud changes.

Phased release of LAADS DAAC data

Data will continue to be accessible on-prem as well as in the Cloud.

